

Involves comparison between the means of two populations (e.g. males & females). We select a random sample from each group and calculate the 2 means, subtracting to get the difference.

We then use this difference to estimate the difference between the **means of the 2 populations from which the samples were drawn**.

The expected difference between the 2 sample means, is the *true* difference between the 2 population means: (*Central Limit Theorem)*.

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i.e. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_





NOTE:

1. The 2 samples must be INDEPENDENT of one another.
2. When finding a confidence interval for the difference between 2 means, we use the popn standard deviations ****1** and **** 2** if we know them.

**If not told these**, we can use the ***sample*** standard deviations ***s*1** and ***s*2**, provided the sample sizes are large enough (n1 >30 *and* n2 >30).

1. A 95% Confidence Interval tells us that **95% of such intervals will CONTAIN the difference between the POPULATION MEANS**.

Example:

If a random sample of 49 women has a mean life of 76 years with a standard deviation of 8 years and a random sample of 64 men has a mean life of 72 years with a standard deviation of 9 years.

1. Find a 95% confidence interval for the difference between the mean lifetimes of all women and all men.
2. What can we conclude about the mean lifespans of *all* men and *all* women on the basis of this confidence interval? Justify your answer.

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1. Try with a 99% confidence interval. What do you notice?